

Poseidon 322

Cruise Report

OASIS



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Cruise Report R.V. Poseidon, cruise POS 322

Funchal 14.05.05 - Kiel 01.06.05

Principal scientist: Dr. Bernd Christiansen, Universität Hamburg

Scope of the cruise

The cruise was one of a series of cruises in the framework of the EU-project OASIS (Oceanic seamounts: an integrated study) which studies the functioning ecology of seamounts in the NE-Atlantic. The research programme during the cruise included measurements of the physical properties of the water column (temperature and salinity), the sampling of particulate organic matter, measurements of chlorophyll a, the sampling of phytoplankton, zooplankton and benthos, and seafloor photography.

Cruise narratives

After loading and assembling the scientific equipment on 13 May, *Poseidon* left the port of Funchal on 14 May. The first station (southern far field station I) was reached in the evening of the same day, and the scientific work started with a series of CTD/Rosette casts, partly combined with a SAPS. The CTD/rosette casts were used for measuring temperature and salinity, and for sampling water for the analysis of organic particles. Water sampling was also performed for the measurement of dissolved organic carbon and oxygen. The SAPS (stand-alone pump system) filters water *in situ* for suspended organic particles.

Poseidon then sailed to the main sampling box at Seine Seamount, where it arrived in the morning of 15 May. We started the sampling programme with a series of VanVeen grab hauls for sampling sediment at the flanks of the seamount at different depths. Due to the difficult bottom topography, only part of these and the following grab hauls was successful, either because the instrument hit hard substrate or did not reach the bottom.

In the afternoon, an 80ft cod trawl was prepared and towed at 3 knots on the summit plateau of Seine Seamount at a depth of 160-170 m. The catch comprised mainly small benthopelagic fish like snipefish (*Macroramphosus* spp.), but also two larger conger eels (*Conger conger*) and a ray (*Torpedo nobiliana*), together with a variety of benthic invertebrates.

The following series of vertical multinet hauls was terminated after the second haul due to technical problems. During the night, a series of CTD/rosette casts was performed

sampling the water column above the eastern base of the seamount. After a few grab hauls, the 1m²-MOCNESS was employed above the summit plateau, with a particular emphasis in sampling the water layer close to the bottom. The MOCNESS is a multiple plankton net with a total of 9 nets which can be opened and closed sequentially to sample zooplankton at different depths. Thanks to fair weather conditions, it was possible to tow the gear at ca 10 m above the seafloor. After the MOCNESS, a first DOS (Deep-sea Observation System, an altimeter-controlled camera sled) transect was made at the northern slope, covering a depth range from 450 to 720 m. The DOS carried a downwards looking still camera with a capacity of 800 frames. It was triggered by a bottom contact switch every time a weight which was hanging under the gear at a 3 m long line, touched the bottom. The DOS was towed at a speed of ca 0.5 kn, the bottom distance was ca 3 m.

After a series of grabs at water depths of ca 1000 m, the CTD/rosette sampling programme was continued at the central station on the summit plateau, followed by a further near-bottom MOCNESS haul on the summit plateau and two deep grabs at 1339 and 1579 m, respectively. In the afternoon of 17 May, we towed a 2m beam trawl on the summit plateau. The catch comprised several fish species and invertebrates, in particular polychaete worms, molluscs and gorgonian corals.

The next series of grab samples was made at a water depth of 800-900 m. CTD/rosette casts to the south of Seine Seamount and a MOCNESS haul close to the bottom above the summit followed. In the afternoon of 18 May, an IKMT (Isaac-Kid-Midwater Trawl) was used to sample micronekton in the water column down to 1000 m. However, the catch was very poor with only a few jellyfish and crustaceans.

Because we had encountered altimeter problems during the first haul of the DOS, we performed a test haul on the summit of the seamount at 160 m, which was successful. We then made an attempt for a DOS transect at the southern flank of the seamount in the evening, but the altimeter display was again unreliable at greater depths. After exchanging the altimeter we finally were able to take images of the seafloor at water depths of 700-750 m.

The sampling programme was continued on 19 May with CTD/Rosette casts to the east of the seamount and VanVeen grab hauls at the southern flank. During the day we again used bottom trawls on the summit plateau. The first beam trawl was very successful, but during the second haul the gear obviously hit a rock and was severely damaged; no catch was retrieved. The following haul with the 80ft ottertrawl again was successful.

The station work at Seine Seamount was finished with grab samples and an IKMT haul during the night, with a slightly richer catch as compared to the first haul which was performed during daylight. *Poseidon* then sailed to the northern far field station (station H) where a series of CTD casts was made.

The next sampling site was Ampère Seamount which is located approximately 100 nm north of Seine Seamount. By contrast to Seine, Ampère Seamount reaches well into the euphotic zone. The summit has a minimum depth of 55 m and a far more complex topography than the fairly flat Seine summit plateau.

We arrived at Ampère Seamount in the evening of 20 May and started with CTD/rosette casts and VanVeen grab hauls. During the day of 21 May, a deep MOCNESS tow (1000-0 m) was performed at the eastern flank of the seamount, followed by a photographic transect with the DOS at the summit. In the night, grab samples and CTD/rosette casts were made at several locations. The sampling programme was similar on the following 2 days, with MOCNESS hauls and DOS transects during the day and sediment sampling and CTD/rosette casts during the night. The station work was finished on 24 May at 01:17. *Poseidon* then sailed to Lisbon where it arrived on 25 May at noon. Part of the scientific party left the ship in Lisbon on 26 May, and *Poseidon* proceeded to Kiel where it arrived on 1 June.

The weather was fairly good during the whole cruise, and we had no loss of station time due to bad weather.

During the last 3 years, the *Poseidon* has become kind of the "OASIS ship", and the crew already felt as part of the OASIS team. In total three OASIS cruises have been made to Seine Seamount on *Poseidon*. We want to thank the crew for their support during all cruises and hope to join them again in future seamount - or other - projects.



Fig. 1: Ampère Seamount, gorgonian corals (water depth 130 m)

I. Annex I: POS 322, list of participants

1	Christiansen (principal scientist)	Bernd	UHH/IHF
2	Denda	Anneke	UHH/IHF
3	Focke	Barbara	UHH/IHF
4	Kaufmann	Manfred	UMAR
5	Martin	Bettina	UHH/IHF
6	Metzger	Tina	FAU
8	Schurigt	Stephanie	URO
7	Springer	Barbara	URO
9	Vilas Español	Juán Carlos	ULPGC
10	Werk	Stephan	URO

FAU: Friedrich-Alexander-Universität Erlangen, Institut für Paläontologie

UHH/IHF: Universität Hamburg/Institut für Hydrobiologie und Fischereiwissenschaft, Germany

ULPGC: Universidad de Las Palmas de Gran Canaria, Spain

UMA: Universidade da Madeira, Depto. Biologia, Estação de Biologia, Portugal

URO: Universität Rostock, Germany

Annex II: POS 322, list of stations

Station-No.	Date	Time UTC	Description	Latitude °N	Longitude °W	Water depth m
191	14.05.2005	22:25	CTD/Ro	33°20.08	013°59.91	4405
191-2	15.05.2005	1:29	CTD/Ro	33°20.00	014°00.00	4404
191-3	15.05.2005	2:20	CTD/Ro	33°20.02	014°00.02	4405
191-4	15.05.2005	3:05	CTD/Ro+SAPS	33°20.07	014°00.07	4406
192	15.05.2005	9:35	VG	33°46.00	014°21.97	177
193	15.05.2005	10:44	VG	33°49.62	014°24.28	817
193-2	15.05.2005	11:35	VG	33°49.57	014°24.52	862
193-3	15.05.2005	12:42	VG	33°49.62	014°24.30	837
194	15.05.2005	14:53	OT	33°42.05	014°25.02	242
195	15.05.2005	16:34	VG	33°43.85	014°27.52	821
195-2	15.05.2005	17:18	VG	33°44.94	014°27.82	848
195-3	15.05.2005	18:02	VG	33°44.41	014°27.55	855
195-4	15.05.2005	18:45	VG	33°44.58	014°27.32	670
195-5	15.05.2005	19:11	VG	33°44.71	014°27.15	485
196	15.05.2005	20:15	MSN	33°44.00	014°27.32	706
196-2	15.05.2005	21:02	MSN	33°44.08	014°27.24	521
197	16.05.2005	23:00	CTD/Ro	33°47.99	014°40.00	4006
197-2	16.05.2005	1:56	CTD/Ro	33°47.96	014°40.06	4009
197-3	16.05.2005	2:45	CTD/Ro	33°48.01	014°40.00	4008
197-4	16.05.2005	3:35	CTD/Ro+SAPS	33°48.07	014°39.94	4009
198	16.05.2005	9:20	VG	33°42.27	014°20.77	944
199	16.05.2005	11:08	MOCNESS	33°41.48	014°24.72	625
200	16.05.2005	14:05	DOS	33°49.84	014°19.77	425
201	16.05.2005	18:02	VG	33°51.71	014°18.58	1004
201-2	16.05.2005	19:20	VG	33°51.69	014°18.48	1002
201-3	16.05.2005	20:11	VG	33°51.78	014°18.33	1069
202	16.05.2005	22:21	CTD/Ro	33°45.97	014°21.98	177
202-2	17.05.2005	0:29	CTD/Ro+SAPS	33°45.96	014°21.87	176
202-3	17.05.2005	3:59	CTD/Ro+SAPS	33°46.05	014°22.09	176
203	17.05.2005	8:07	MOCNESS	33°41.08	014°24.99	1038
204	17.05.2005	11:36	VG	33°51.97	014°17.74	1281
204-2	17.05.2005	12:56	VG	33°52.28	014°17.59	1438
205	17.05.2005	15:40	BT	33°41.98	014°24.86	279
206	17.05.2005	17:50	VG	33°41.41	014°25.63	812
206-2	17.05.2005	18:46	VG	33°41.21	014°25.19	812
206-3	17.05.2005	19:27	VG	33°41.14	014°25.22	811

Station-No.	Date	Time UTC	Description	Latitude °N	Longitude °W	Water depth m
206-4	17.05.2005	20:32	VG	33°41.40	014°25.55	807
206-5	17.05.2005	21:10	VG	33°41.41	014°25.51	804
207	17.05.2005	23:12	CTD/Ro	33°32.12	014°30.01	4115
207-2	18.05.2005	2:27	CTD/Ro	33°32.04	014°29.93	4114
207-3	18.05.2005	3:15	CTD/Ro	33°32.15	014°30.07	4121
207-4	18.05.2005	3:52	CTD/Ro+SAPS	33°32.22	014°30.15	4121
208	18.05.2005	8:38	MOCNESS	33°41.26	014°24.96	923
209	18.05.2005	11:57	IKMT 6	33°41.99	014°29.79	1694
210	18.05.2005	14:15	DOS	33°45.99	014°21.99	176
211	18.05.2005	15:49	DOS	33°42.43	014°22.15	559
211-2	18.05.2005	16:30	DOS	33°42.40	014°21.92	681
211-3	18.05.2005	17:48	DOS	33°42.47	014°21.73	584
211-4	18.05.2005	18:32	DOS	33°42.48	014°21.62	575
212	18.05.2005	23:06	CTD/Ro	33°45.00	014°03.00	4414
212-2	18.05.2005	2:22	CTD/Ro	33°45.00	014°03.16	4412
212-3	18.05.2005	3:05	CTD/Ro	33°44.98	014°03.08	4412
212-4	18.05.2005	3:36	CTD/Ro+SAPS	33°45.04	014°03.25	4412
213	18.05.2005	8:56	VG	33°41.35	014°24.99	762
213-2	18.05.2005	9:36	VG	33°41.44	014°20.04	804
213-3	18.05.2005	10:09	VG	33°41.49	014°25.03	648
214	18.05.2005	11:10	BT	33°43.40	014°24.82	174
214-2	18.05.2005	12:10	BT	33°45.90	014°22.90	177
215	18.05.2005	13:42	OT	33°43.65	014°25.00	174
216	19.05.2005	15:38	VG	33°40.73	014°24.67	1154
216-2	19.05.2005	16:48	VG	33°40.80	014°24.71	1227
216-3	19.05.2005	18:09	VG	33°41.14	014°24.96	948
216-4	19.05.2005	19:07	VG	33°41.47	014°24.71	612
216-5	19.05.2005	19:48	VG	33°41.63	014°24.69	489
217	19.05.2005	20:49	IKMT 6	33°42.02	014°30.10	2039
218	20.05.2005	4:45	CTD/Ro	34°15.05	014°00.05	4075
218-2	20.05.2005	7:23	CTD/Ro	34°15.67	014°00.09	4059
218-3	20.05.2005	8:04	CTD/Ro	34°15.92	013°59.89	4064
218-4	20.05.2005	8:50	CTD/Ro + SAPS	34°15.00	014°00.05	4089
219	20.05.2005	20:42	CTD/Ro	34°59.94	012°55.05	1867
220	20.05.2005	22:35	VG	35°00.98	012°57.04	989
220-2	20.05.2005	23:48	VG	35°01.00	012°57.01	959
220-3	21.05.2005	1:07	VG	35°01.21	012°57.41	853

Station-No.	Date	Time UTC	Description	Latitude °N	Longitude °W	Water depth m
221	21.05.2005	4:48	CTD/Ro	35°01.40	012°53.82	640
222	21.05.2005	5:36	CTD/Ro	35°01.83	012°51.56	475
223	21.05.2005	7:15	MOCNESS	35°01.99	012°49.26	1607
224	21.05.2005	13:14	DOS	35°03.11	012°52.73	64
		13:15	Secchi-disc	35°03.09	012°52.75	65
224-2	21.05.2005	15:05	DOS	35°03.01	012°52.82	81
225	21.05.2005	17:05	VG	35°02.98	012°52.75	69
225-2	21.05.2005	17:12	VG	35°02.94	012°52.81	90
225-3	21.05.2005	17:36	VG	35°02.96	012°52.77	62
225-4	21.05.2005	17:56	VG	35°03.05	012°52.72	63
225-5	21.05.2005	18:16	VG	35°03.04	012°52.69	64
226	21.05.2005	18:59	VG	35°04.92	012°52.62	755
226-2	21.05.2005	19:40	VG	35°04.86	012°52.65	716
226-3	21.05.2005	20:40	VG	35°05.03	012°52.62	758
226-4	21.05.2005	21:39	VG	35°05.49	012°52.76	924
227	21.05.2005	23:00	CTD/Ro + SAPS	35°07.39	012°50.94	1743
227-2	22.05.2005	2:13	CTD/Ro + SAPS	35°07.36	012°50.93	1736
227-3	22.05.2005	4:57	CTD/Ro + SAPS	35°07.43	012°50.80	1803
228	22.05.2005	7:35	CTD/Ro	35°07.19	012°59.13	1765
229	22.05.2005	9:47	MOCNESS	35°02.00	012°53.98	324
230	22.05.2005	11:25	VG	35°05.21	012°54.05	484
231	22.05.2005	12:08	DOS	35°03.70	012°53.73	134
232	22.05.2005	16:05	CTD/Ro	35°03.68	012°53.81	135
233	22.05.2005	16:55	VG	35°03.41	012°56.56	497
233-2	22.05.2005	17:19	VG	35°03.37	012°56.61	496
233-3	22.05.2005	17:59	VG	35°02.55	012°56.92	624
233-4	22.05.2005	18:23	VG	35°02.42	012°56.96	630
233-5	22.05.2005	19:29	VG	35°00.60	012°58.71	775
234	22.05.2005	20:43	DOS	35°01.49	012°52.72	1123
235	22.05.2005	23:52	CTD/Ro	35°02.32	012°52.98	402
236	23.05.2005	0:49	CTD/Ro	35°00.02	012°49.00	1176
236-2	23.05.2005	3:46	CTD/Ro + SAPS	35°00.00	012°49.00	-
236-3	23.05.2005	5:00	CTD/Ro + SAPS	35°00.02	012°49.00	-
237	23.05.2005	7:10	MOCNESS	35°02.00	012°49.42	1539
238	23.05.2005	13:56	CTD/Ro	35°09.31	012°49.44	2427
238	23.05.2005	13:12	CTD/Ro	35°08.75	012°48.88	-
239	23.05.2005	14:50	DOS	35°02.00	012°56.19	646

Station-No.	Date	Time UTC	Description	Latitude °N	Longitude °W	Water depth m
239-2	23.05.2005	15:39	DOS	35°01.72	012°56.13	750
239-3	23.05.2005	16:34	DOS	35°03.30	012°57.51	367
239-4	23.05.2005	18:01	DOS	35°03.45	012°54.86	192
240	23.05.2005	20:05	CTD/Ro	35°01.40	012°52.68	1179
241	23.05.2005	21:07	CTD/Ro	35°00.69	012°52.29	1454
242	23.05.2005	22:24	VG	35°04.83	012°52.70	469
242-2	23.05.2005	23:01	VG	35°05.19	012°52.68	830
242-3	23.05.2005	23:40	VG	35°05.17	012°52.39	915
242-4	24.05.2005	0:30	VG	35°05.99	012°52.72	1006

Gear used

CTD/Ro SBE 911 with 12 bottles rosette
 BG VanVeen grab
 OT 80ft ottertrawl
 MOCNESS 1m²-MOCNESS
 DOS deep-sea observation system (camera sled)
 SAPS stand-alone pump system
 MSN multinet 0.25 m²
 BT 2m-beamtrawl
 Secchi-disc

Annex III: POS 322, maps

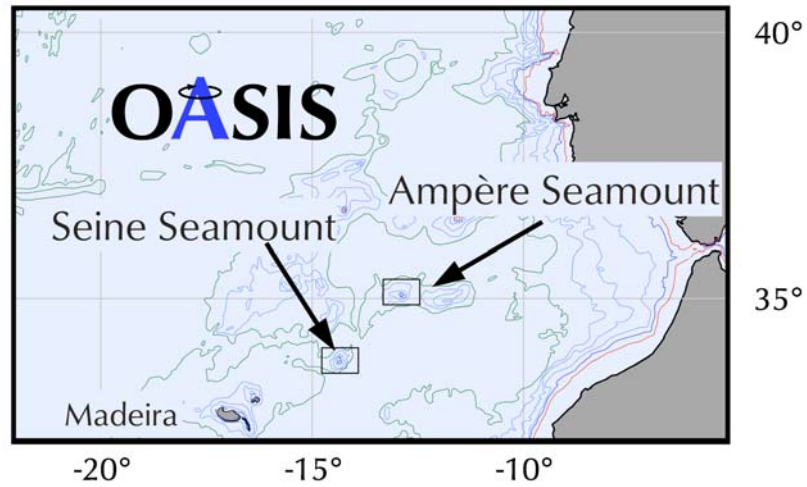


Fig. 1: Map of study locations

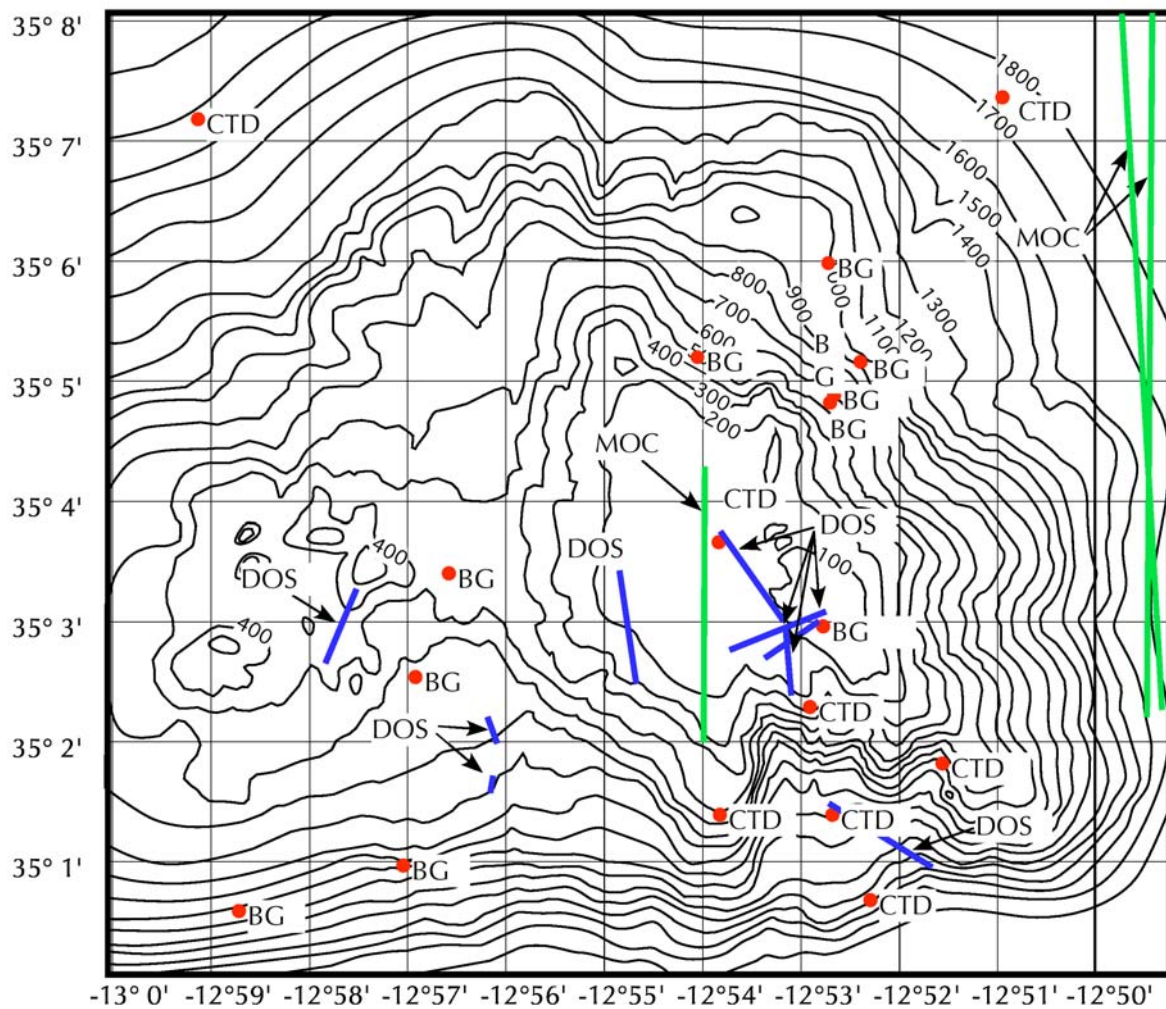


Fig. 2: Map of Ampère Seamount showing sampling stations.
See list of stations for abbreviations of sampling gear

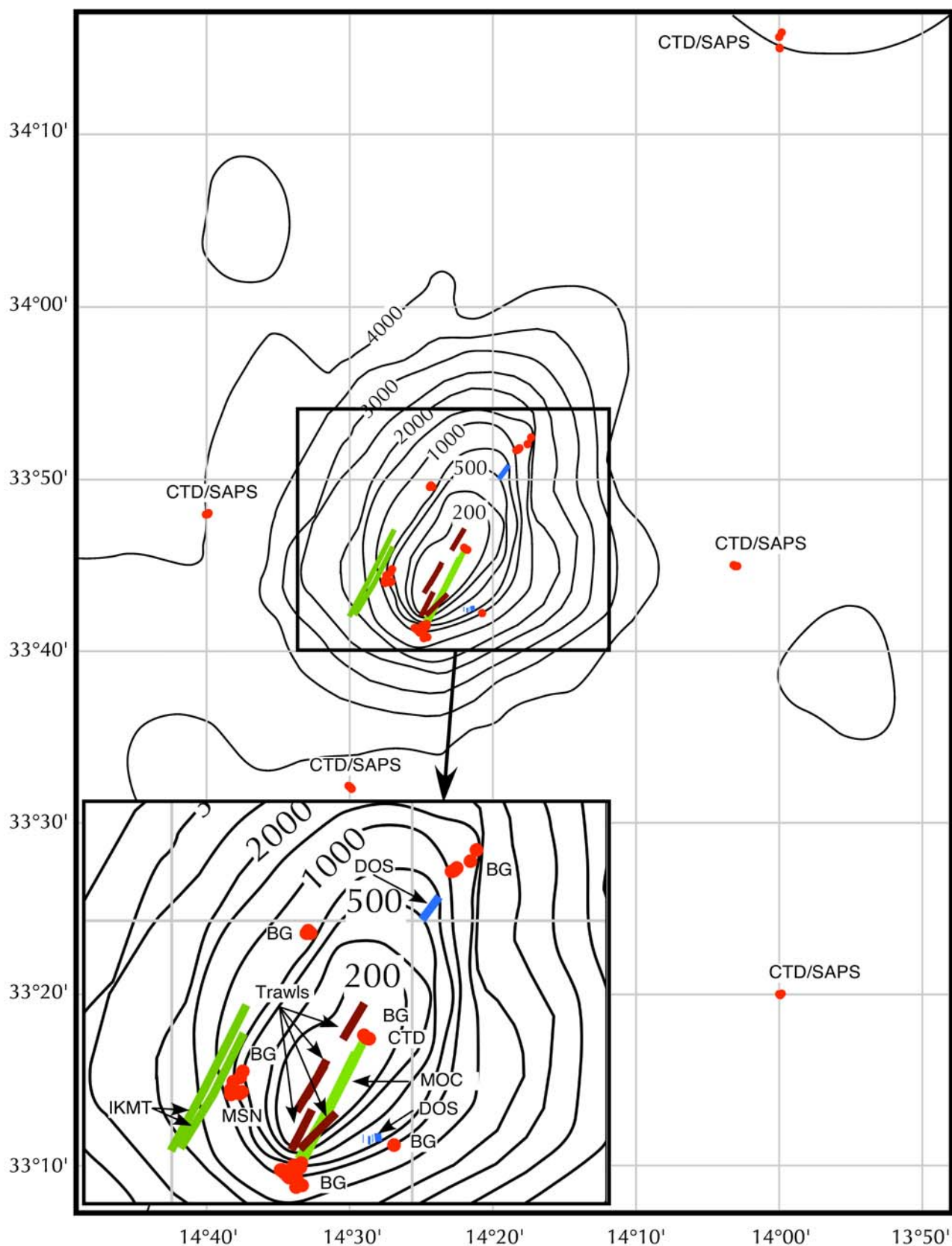


Fig. 3: Map of Seine Seamount showing sampling stations. See list of stations for abbreviations of sampling gear